

ABSTRACT OF THE DISCLOSURE

An automated implantation system assists the implantation of low dose radioisotope seeds in a patient as part of a brachytherapy procedure. A Z-axis automated motion control system and an X-Y axis automated motion control system control a needle assembly. The X-Y axis automated motion control system positions an insertion axis of the needle assembly relative to the patient. The Z-axis automated motion control system selectively moves the needle assembly along the insertion axis to implant at least one radioisotope seed. This process is repeated for a plurality of locations on a base plane perpendicular to the insertion axis. Preferably, the radioisotope seeds are contained in a replaceable cartridge and the needle assembly is also replaceable.